

WHAT IS CLAIMED IS

- Sukai*
- 5 1. A polishing solution supply system comprising,
a polishing table for placing a semiconductor substrate on
the major surface thereof;
a first supply unit for spraying and supplying abrasive slurry;
a second supply unit for spraying and supplying additive;
a third supply unit for spraying and supplying pure water;
and
10 a mixing unit for mixing the mist of abrasive slurry supplied
from said first supply unit, the mist of additive supplied from said
second supply unit and the mist of pure water supplied from said third
supply unit, said mixing unit supplying the mixture onto said major
surface of said polishing table.
- 15 2. A polishing solution supply system comprising,
a polishing table for placing a semiconductor substrate on
the major surface thereof;
a first supply unit for spraying and supplying abrasive slurry
20 to a specified location on said major surface of said polishing table;
a second supply unit for spraying and supplying additive onto
said major surface of said polishing table so as to mix with the mist
of abrasive slurry supplied from said first supply unit; and
a third supply unit for spraying and supplying pure water onto
25 said major surface of said polishing table so as to mix with the mist
of abrasive slurry supplied from said first supply unit and with the
mist of additive supplied from said second supply unit.
- 30 3. The polishing solution supply system according to claim
1, wherein each of said supply units having,
a tank for storing each liquid;
a pipe for supplying said liquid from said tank to said mixing
unit;
35 a pump for supplying said liquid in said tank to said pipe
at a specified pressure, or a gas supply unit for supplying a gas
into said tank so as to supply said liquid in said tank to said pipe
at a specified pressure;
a control unit for controlling the pressure of said liquid
in said pipe to a specified pressure; and

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a spray unit for spraying said liquid supplied from said pipe into said mixing unit.

4. The polishing solution supply system according to claim
5 2, wherein each of said supply units having,
a tank for storing each liquid;
a pipe for supplying said liquid from said tank to said polishing table;

10 a pump for supplying said liquid in said tank to said pipe at a specified pressure, or a gas supply unit for supplying a gas into said tank so as to supply said liquid in said tank to said pipe at a specified pressure;

15 a control unit for controlling the pressure of said liquid in said pipe to a specified pressure; and
a spray unit for spraying said liquid supplied from said pipe onto said major surface of said polishing table.

5. The polishing solution supply system according to claim
20 3, wherein said control unit includes a flow meter for measuring the flow rate of liquids in said pipe, said control unit controlling the rotating speed of said pump or controlling the pressure of said gas supplied from said gas supply unit on the basis of the results of measurements by said flow meter.

25 6. The polishing solution supply system according to claim 1, wherein said additive is aqueous solution of organic acid, or aqueous solution of hydrogen peroxide.

30 7. The polishing solution supply system according to claim 2, wherein said additive is aqueous solution of organic acid, or aqueous solution of hydrogen peroxide.

35 8. An apparatus for polishing a semiconductor substrate comprising,
the polishing solution supply system according to claim 1;
and
a carrier head for pressing said semiconductor substrate against said major surface of said polishing table.

9. An apparatus for polishing a semiconductor substrate comprising,
the polishing solution supply system according to claim 2;
and
5 a carrier head for pressing said semiconductor substrate against said major surface of said polishing table.
10. A method of supplying a polishing solution through use of the polishing solution supply system according to claim 1,
comprising the steps of,
spraying and supplying each of said abrasive slurry, said additive and said pure water into said mixing unit, and mixing them in said mixing unit; and
15 supplying the mixture onto said major surface of said polishing table.
- 20 11. A method of supplying a polishing solution through use of the polishing solution supply system according to claim 2,
comprising a step of spraying and supplying each of said abrasive slurry, said additive and said pure water onto said major surface of said polishing table so as to mix with each other.
- 25 12. The method of supplying a polishing solution according to claim 10, further comprising the steps of,
measuring the quantity of each of said abrasive slurry, additive and pure water; and
controlling the supply pressure of each fluid to a desired value on the basis of the results of measurement.
- 30 13. The method of supplying a polishing solution according to claim 10, further comprising a step of supplying pure water to said mixing unit, when said abrasive slurry is not supplied to said mixing unit for a specified period of time.
- 35 14. A method of polishing a semiconductor substrate while pressing the semiconductor substrate against a polishing table using a carrier head, in the apparatus for polishing a semiconductor substrate according to claim 8, comprising the steps of,

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spraying and supplying each of said abrasive slurry, said additive, and said pure water into said mixing unit, and mixing them in said mixing unit; and

5 supplying the mixture onto said major surface of said polishing table.

15. A method of polishing a semiconductor substrate while pressing the semiconductor substrate against a polishing table using a carrier head, in the apparatus for polishing a semiconductor substrate according to claim 9, comprising the steps of,

10 spraying and supplying each of said abrasive slurry, said additive, and said pure water onto said major surface of said polishing table so as to mix with each other.

15 16. A method of manufacturing a semiconductor device through use of the polishing solution supply system according to claim 1.

20 17. A method of manufacturing a semiconductor device through use of the polishing solution supply system according to claim 2.

25 18. A method of manufacturing a semiconductor device through use of the apparatus for polishing a semiconductor substrate according to claim 8.

25 19. A method of manufacturing a semiconductor device comprising the method of supplying a polishing solution according to claim 10.

30 20. A method of manufacturing a semiconductor device comprising the method of polishing a semiconductor substrate according to claim 14.